

6th MTERMS 2016

Malaysian Tissue Engineering and
Regenerative Medicine Scientific Meeting

in conjunction with

2nd Malaysian Stem Cell Meeting

*"Ensuring sustainability through
innovative regenerative
technologies"*

Effects of Ionizing Radiation on Chondrocytes Growth: Work In Progress

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الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُونَيْتِيسْتِي إِسْلَامِيَّةٌ إِنْتَارَا بَغْسَا مِلْدِسِيَا

INTRODUCTION

**Medical
Imaging &
Radiation**



**Tissue
Engineering**



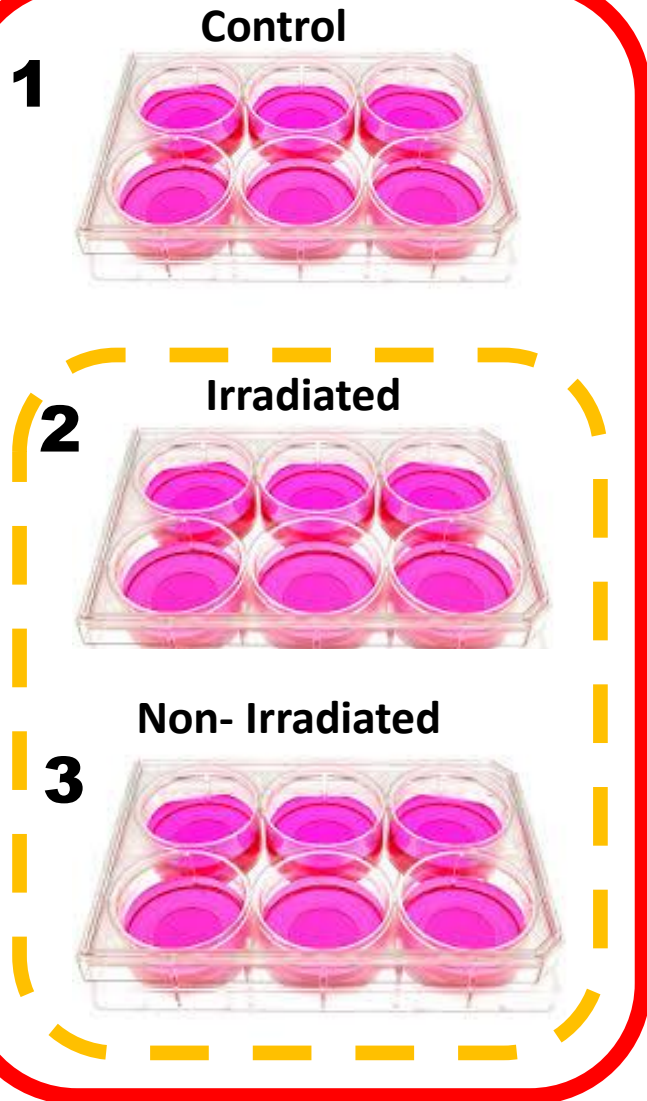
<http://www.aiche.org/....biomolecular-engineering-cell-and-tissue-engineering>

Objective

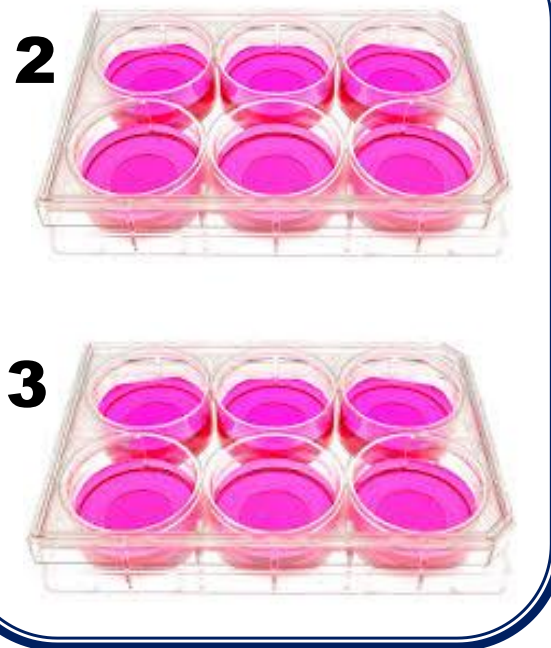
To evaluate the possible effects of **ionizing radiation** on **cellular morphology** and **growth kinetics** of monolayer cultured chondrocytes.



Methodology



Thermal Container



Results & Discussions

**Morphological
Observation**

**Growth Kinetic
Profile**

a) Cell Viability

b) Total Cell Count

c) Growth Rate

d) Total Number Of Cell
Doubling

e) Population Doubling Time

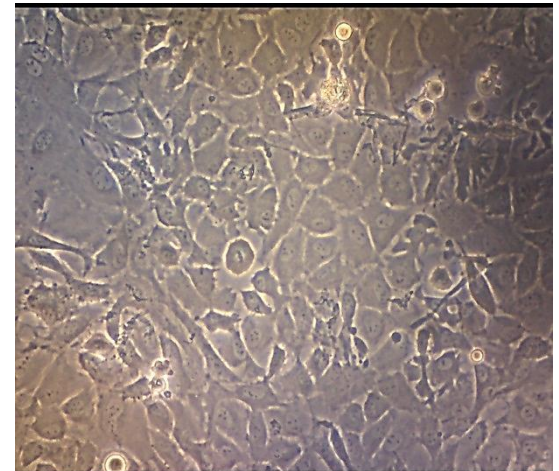
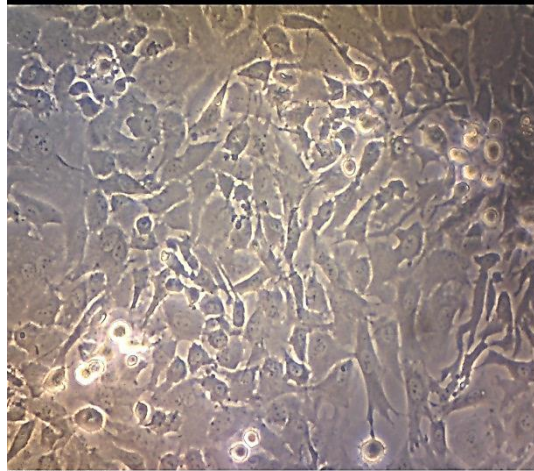
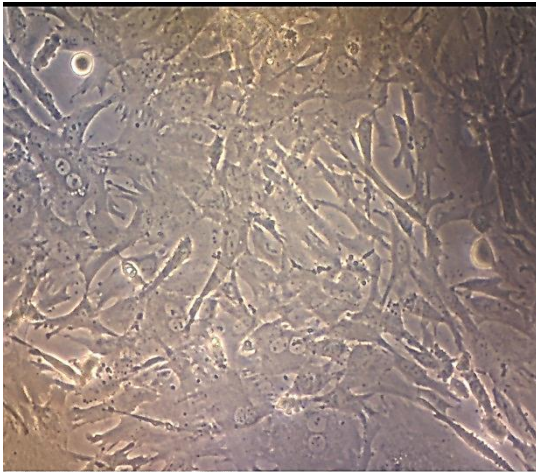
Cellular Morphology

Control

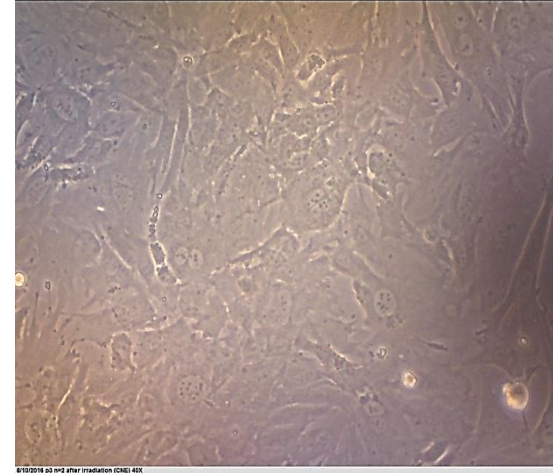
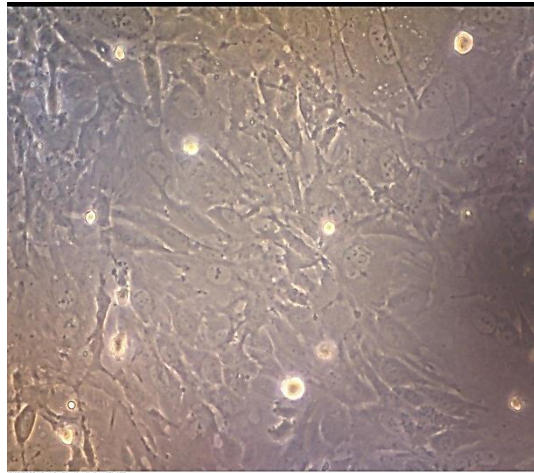
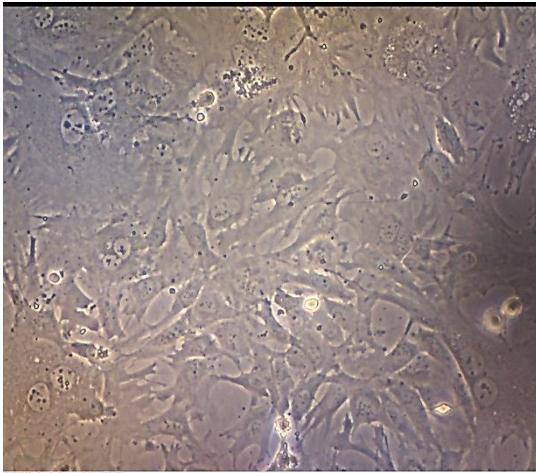
Irradiated

Non-Irradiated

P0

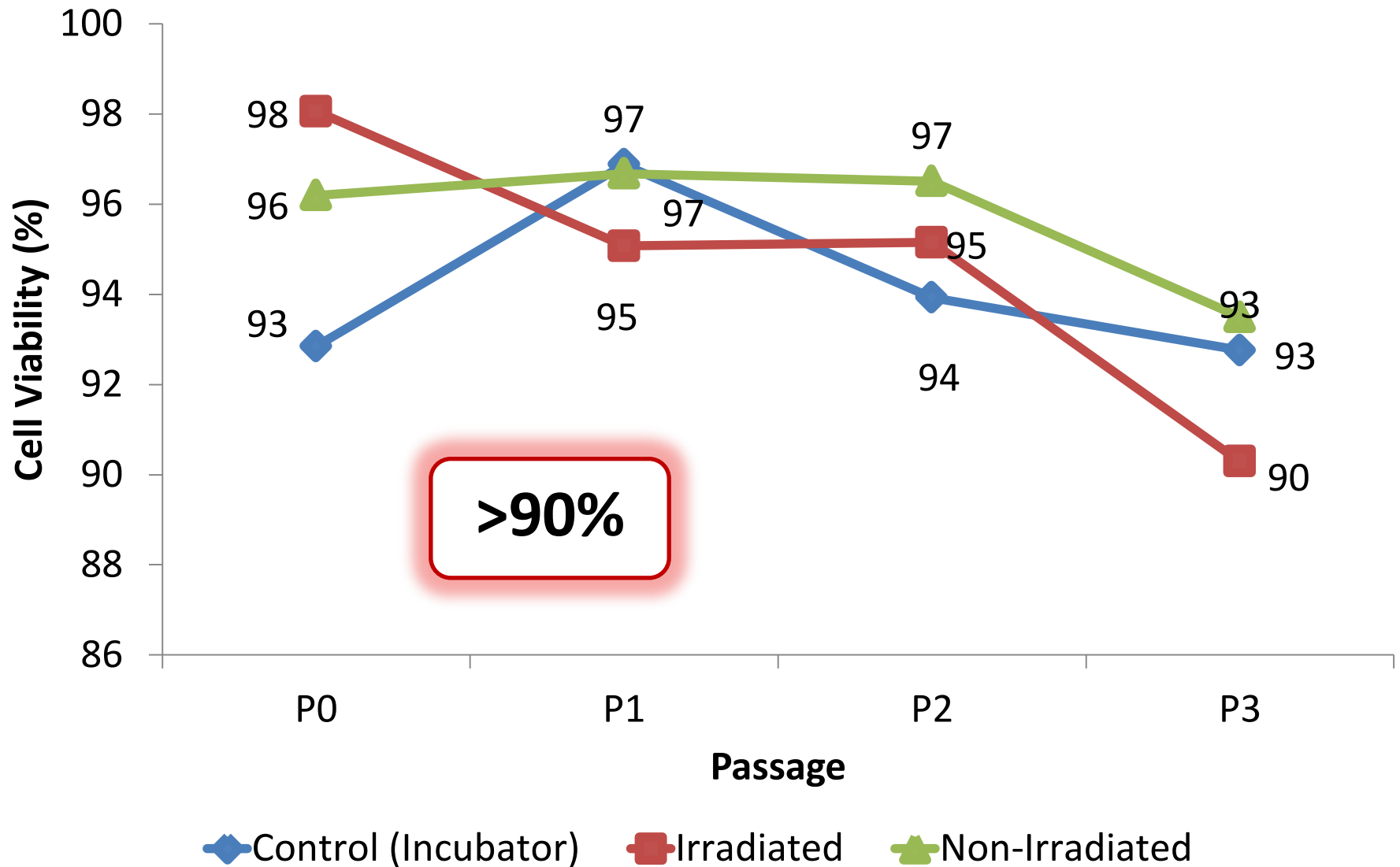


P3

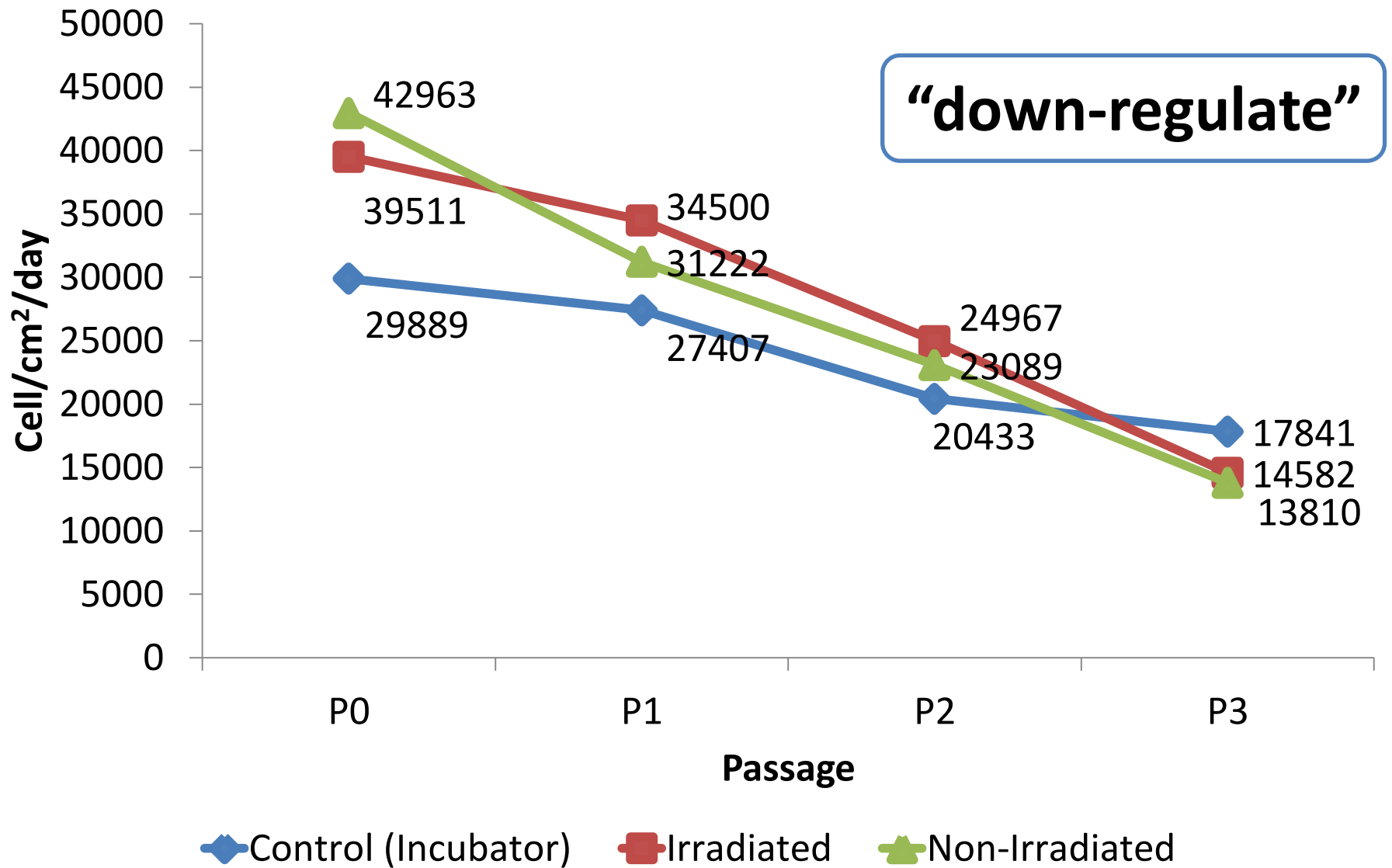


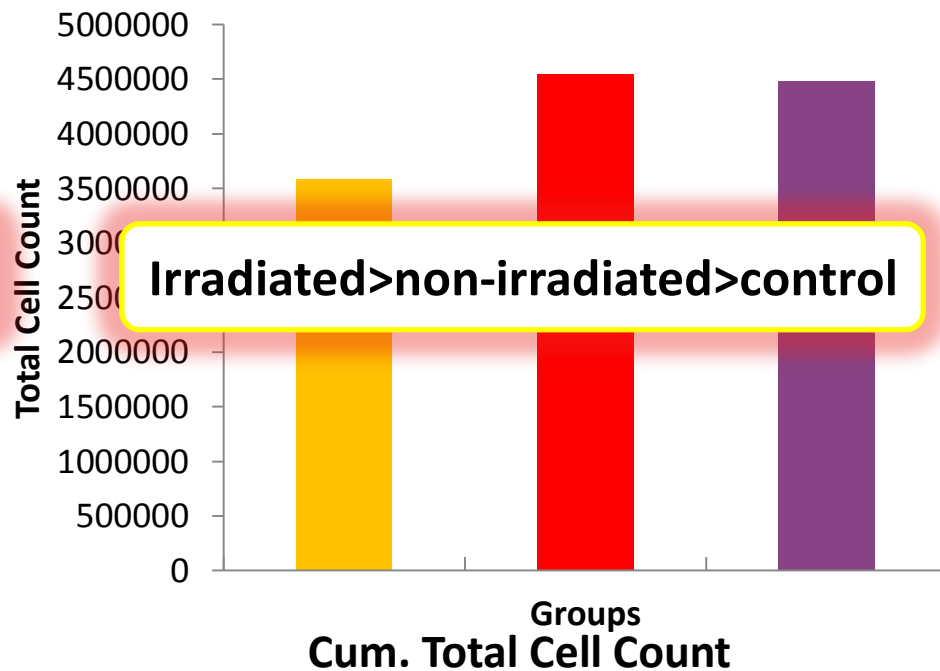
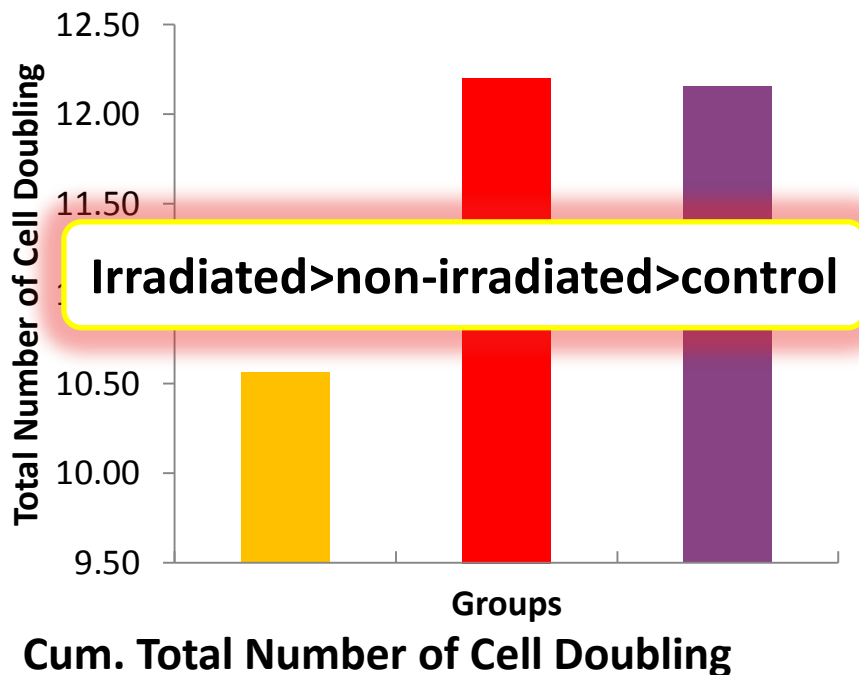
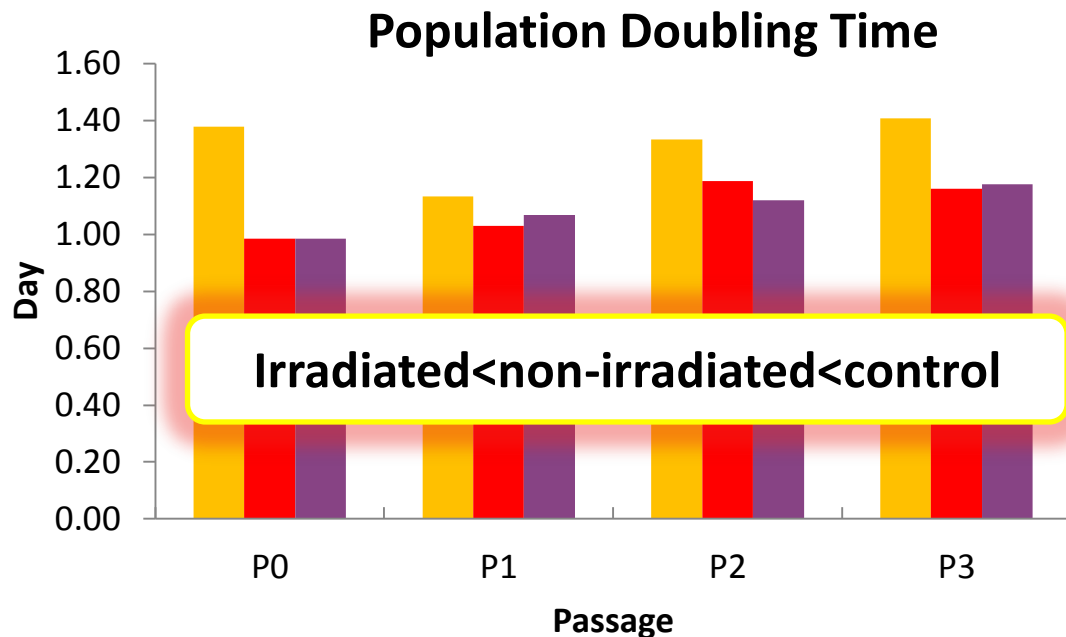
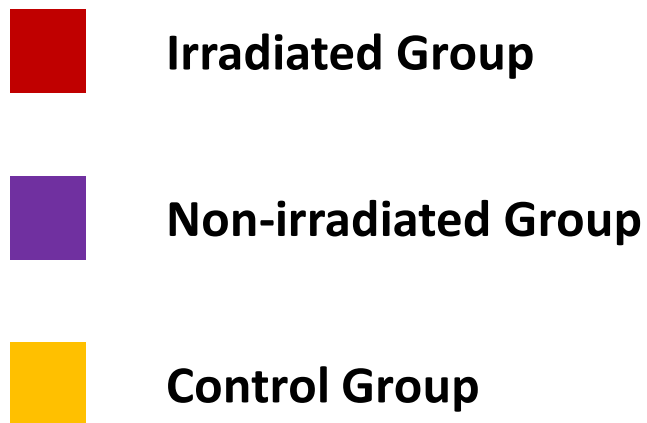
Chondrocytic → Fibroblastic

Cell Viability



Growth Rate

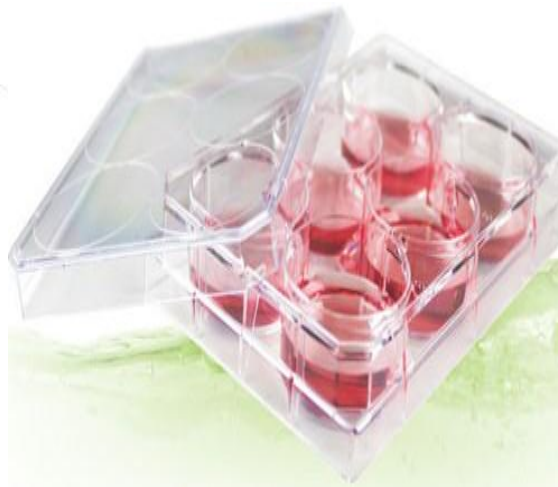




Ionizing radiation may have certain effects on the growth of chondrocytes.




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Application of Medical Imaging in Tissue Engineering



Signaling
Factor??

وَمَا خَلَقْنَا السَّمَاءَ وَالْأَرْضَ وَمَا بَيْنَهُمَا لْعِبِينَ ﴿١٦﴾ 

We did not create the heavens and the earth just for fun.

(Surah Al-Anbiya' 21:16)

- Experiment should be conducted in a larger scale.
- Variation in exposure factor should be conducted.
- Evaluation of the actual dose using Optical Stimulated Luminescence Dose (OSLD) is underway to determine the dose given.
- Gene expression analysis using chondrogenic (cartilaginous) markers is underway



- ✓ Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Kuantan Campus
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In Grateful Appreciation



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